

GFC Endorses Women's Studies Program

A Women's Studies Program approved by General Faculties Council on 24 November.

The interdisciplinary undergraduate degree program is to be housed in the Faculty of Arts.

The proviso "Subject to the availability of an appropriate level

of funding" is attached to the program.

Last year's endorsement of the four-year BA program makes this (Women's Studies) "academically sound" program possible, Vice-President (Academic) Meekison told Council.

Some concerns about the program were raised. Peter Wood,

graduate student member, wondered about the criteria for admission. "Whatever program we have at this University, it has to be open to all students," he said. "Fifty percent of us are disbarred by gender from being women."

Dean Terry White (Arts) responded by emphasizing that all programs in the Faculty are equal

opportunity programs. "We anticipate a mix of students; there are no strictures for admission other than the usual academic standards."

Mr. Wood expressed uncertainty as to "who it will benefit, how it will benefit, and why it will benefit."

A.W. Jenkins (Economics) questioned whether instructors could talk about Marie Antoinette without talking about her husband. "We may end up with graduates who have an unbalanced view of the world."

The first two years of study, Dean White explained, would give students a broad exposure to the discipline; the second two years would be a period of specialization.

Dean Martha Piper (Rehabilitation Medicine) recommended that the program's research component be packaged with its teaching component.

The proposal noted that Women's Studies programs have developed quite differently in the various Canadian universities.

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FOLIO

University of Alberta

4 December 1986

Task Force on Needs for Delivery of University Education Pumps Teleconferencing

Members of Senate heard, and saw, a unique presentation by members of the Task Force Inquiry Into Needs for the Delivery of University Education, at their meeting on 21 November.

Task Force Chairman Jack McLean introduced the report with a staged teleconference call (he was addressing Senators via telephone but was in an office adjacent to the Council Chamber) to emphasize the role of teleconferencing in teaching. Mr. McLean explained that the Task Force was prompted, in part, by concerns voiced during recent years at Senate meetings held outside Edmonton about lack of access to University programs. In 1985, a task force was assigned the responsibility of looking at post-secondary education options in the province and its terms of reference included: soliciting views concerning needs, real or perceived, for the delivery of university education in Alberta; and surveying methods used by institutions in providing university education.

Mr. McLean pointed out that opinion was solicited from four groups, mainly in northern Alberta: University faculty; administrators of public and private colleges in northern Alberta; students in grade 12, in colleges and at the University; and

other groups or educators with an interest in the matter. The 11-member Task Force looked at non-traditional learning methods such as off-campus courses and those offered at times other than regular hours; and computer-assisted instruction, teleconferencing and satellite television.

Jean Watters, Director, Continuing Education at Faculté Saint-Jean, attended the meeting to explain to Senators how the Faculté uses teleconferencing in its teaching. His talk also included a film demonstrating this particular method of teaching.

The Task Force reached a number of conclusions as a result of its extensive study one of which was that "while there are at present a great many ways to obtain a university education, there is a need to increase awareness of the options available, and to develop knowledge of new techniques".

Among the 11 recommendations passed by Senate were these: "That coordination and cooperation among universities and colleges, to complement rather than compete, should be encouraged in the research and development of technological and other non-traditional modes of educational delivery"; "that Alberta Advanced Education should

consider developing a communication plan to publicize the educational opportunities available throughout the province by non-traditional methods"; and "that consideration be given to more use of University of Alberta facilities during 'non-traditional' times, (evenings, weekends, spring and summer), in order to better meet the needs of some groups of students".

Before this presentation, Chancellor Tevie Miller gave his report to Senate. He outlined his activities on behalf of the University during the past two months. His many social commitments included visits to alumni branches in London (Ont.) and Ottawa. He also met with most of the Deans, and hopes to have met them all by Christmas, to familiarize himself with each Faculty's activities.

Senate heard from President Horowitz that the University doesn't know what lies ahead insofar as next year's budget is concerned. He stressed that "we have to get the message across that there must be an investment in higher education." In his report, Dr. Horowitz also told Senators that the University's first installment of its 5 percent profit from the sale of the *The Canadian Encyclopedia* had been received, and

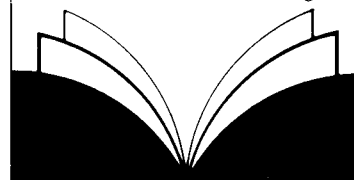
the \$50,000 cheque allocated to the acquisition of books for the libraries. He said that the second installment, of close to \$50,000, is expected to arrive soon.

The afternoon session was taken up with closing discussion of the Task Force report, a presentation on the Faculty of Graduate Studies and Research by Dean Chia, a report on enrolment by the Registrar, (see the accompanying tables), and the review of a report submitted by the Committee of Lay Observers of the Admissions Process in Quota Programs.

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Task Force continued

Dean Chia reported on activities undertaken during his first three years with the Faculty of Graduate Studies and Research, beginning with a summary history of his Faculty in which he noted that graduate studies have been around as long as this University. He also gave details of enrolments in the major Faculties that offer graduate programs. Education has the largest number with 799 students, followed by Science (621), Arts (566), Engineering (375), and Agriculture and Forestry (242).

So far in his incumbency, Dean Chia and his colleagues have instituted a number of changes all of which are designed to reflect the importance of research at this University. Among notable innovations in Dean Chia's "five-year" plan are the identification of programs that need help; the establishment of scholarships designed to recruit top-rate students from other universities; and the provision of travel funds to doctoral students to assist them in attending appropriate conferences. This last objective has already been achieved, according to Dean Chia. With the help of the Alma Mater Fund and Alumni Director Susan Peirce, there are now sufficient

Faculty	Full-Time Students		Part-Time Students		New Students	
	1985/86	1986/87	1985/86	1986/87	1985/86	1986/87
Agriculture & Forestry	783	748	58	46	196	202
Arts	4,747	4,979	897	812	1,441	1,510
Business	1,528	1,566	118	107	361	407
Dentistry	275	269	—	—	46	—
Education	3,228	3,197	788	846	788	912
Engineering	2,205	2,186	55	47	570	538
Graduate Studies	2,714	2,758	860	983	439	419
Home Economics	416	431	39	25	101	111
Law	507	528	4	2	59	49
Medicine	974	1,007	22	31	129	152
Nursing	587	595	573	533	383	357
Pharmacy & Pharmaceutical Sciences	370	414	3	3	78	70
Physical Education & Recreation	785	852	51	39	228	270
Rehabilitation Medicine	391	463	7	6	57	93
Faculté Saint-Jean	306	380	31	32	113	151
Science	4,408	4,383	204	217	1,494	1,597
Unclassified Student Program	—	—	582	772	402	480
Library Science	—	—	1	0	—	—
Total	24,224	24,756	4,293	4,501	6,885	7,357

Office of the Registrar (all 1986/87 data have been compiled as of 24 October 1986 and are compared to data taken on the same date in 1985)

funds to allow doctoral candidates speaking at major conferences two such journeys (at a cost of \$300 to \$500 each).

Not all Dean Chia's objectives have been reached. One, the development of mechanisms allowing systematic peer review of graduate programs, has yet to be achieved. Another goal is the establishment of a register of graduate program directors and supervisors, thus making sure that

only people qualified to undertake such supervision do so.

Two other achievements may be noted. Now, all external examiners must prove their appropriateness by submitting *curricula vitae*. Secondly, abstracts of doctoral theses are now printed in *Dissertation Abstracts*. This previously was impossible because of the c. \$40 charge per abstract.

Throughout Dean Chia's presentation, Senate members

clearly were impressed by his insistence on quality and his interest in graduate students. When asked if promising students could be barred from admission because of previous academic performance, Dean Chia demonstrated his realistic and flexible approach by noting that recently he approved entrance to a doctoral program of a person with no university education at all. That person, he said, is clearly a "genius".□

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Office of Public Affairs
423 Athabasca Hall
University of Alberta
Edmonton, Alberta T6G 2E8
(403) 432-2325.

All enquiries and
correspondence should be
directed to:
Ron Thomas
Editor

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Women's Studies continued

More than half of those institutions offering Women's Studies give special courses designated as "Women's Studies" or the equivalent; 11 currently provide (in one way or another) for a minor in Women's Studies; and five have established a major or specialist degree in the subject. Four Canadian universities—Carleton, Ontario Institute for Studies in Education, Simon Fraser and York—offer graduate work in Women's Studies.

When questioned about a graduate program here, Dr. Meekison indicated that it was a strong possibility, but that all efforts would be directed to getting a good, sound undergraduate program off the ground.

The program's developers envisage the emergence of three full-course equivalents in Women's Studies. "Other courses will be developed at a later date. Some will be team-taught and others taught by one or two individuals."

The proposal stated that, since the mid-1970s, there has been "a persistent and growing student demand for courses about women, gender and feminist scholarship. As a result, there are now some 19 undergraduate courses and 8 graduate courses in 17 departments."

A Women's Studies Committee

would administer the program. The Committee would consist of representatives from each academic unit in the University which offers a cross-listed Women's Studies course, student representatives, individuals from other groups on campus with an interest in the subject, and from the women's community at large. The Committee's Chair would be elected from among its full-time academic staff members in Arts.

The proposed program is seen to be economical, depending in large part on resources already in place.

Other Matters

Council received the Campus Law Review Committee's annual report covering the 1985-86 year. With regard to plagiarism and the wide distribution of guidelines for dealing with cheating and plagiarism, Kevan Rhead commended the fact that Deans made a point of requesting instructors to review with their students the definition of plagiarism and cheating, and the ramifications of committing these offences.

In reporting the recent activities of the Facilities Development Committee, Vice-President (Administration) Warrack said a standing committee on naming buildings and facilities has a full complement of members.□

A Family 'Festival of Trees'



An example of the designer-decorated trees and holiday treats which will abound at the "Festival of Trees".

If you and yours want to get into the Christmas spirit early, make plans to visit the Convention Centre some time between 4 and 7 December. The first "Festival of Trees", sponsored by the University Hospitals Foundation, is a colorful exhibition of some 100

designer-decorated Christmas trees, wreaths and garlands—all in a fantasy-like setting.

All trees, along with the wreaths and garlands, will be on sale. The exhibition will also feature a boutique designed for those who enjoy giving gifts that have never seen the beaten path, a Sweet Shoppe specializing in traditional

and ethnic holiday goodies, and for the child in all of us, Children's World, where youngsters can purchase gifts for under \$3 and be entertained by a variety of activities. And of course, Santa Claus and Sir Edward Evergreen (the Festival's mascot) will be on hand to foster the holiday spirit.

The Foundation, through the Festival and other fund-raising efforts, makes a significant financial contribution to the Hospitals for medical research, education and patient amenities. The admission fee of \$2 for adults and \$1 for children plus the cost of gifts goes to a worthy cause. □

Science Takes a Close Look at Herbs

Chinese herbalists and Western pharmacologists are working together at the University of Alberta to find out why herbal medicine is effective.

"Our hope—and our ultimate goal—is to find out new classes and groups of drugs," says scientist Peter Pang.

The research program is the result of a five-year research agreement arranged by Pang and recently signed between the University (where Pang is Chairman of Physiology) and Jinan University in China. Over the next five years, Jinan University will send herbs and experts in herbal medicine to the University of Alberta where the substances will be scientifically analyzed.

Herbal medicines have been used in China for thousands of years—because they work. (Herbs that weren't useful, or had unwelcome side effects, have long been discarded.)

"But very often we don't know how and why the herbs work," says Pang. "And as long as the scientific information isn't available, Western scientists will look on the effects of herbal medicine as 'all in the mind'."

"The process now is take these successful herbs and subject them to thorough, systematic, scientific analysis to find what they do and how they do it.

Pang is particularly interested in herbs used to lower the blood pressure, which "hopefully will act

directly on the blood vessels, and won't affect the nervous system."

The herbal/scientific analysis exchange is a continuation of an arrangement Pang made with Jinan University while at Texas Tech University Health Sciences Center.

A number of herbs were investigated in Texas, and Pang believes he has some interesting leads.

"The fact is," he says, "herbs do work. And unlike many drugs, they often don't have serious side effects."* □

** Reprinted from the Fall 1986 edition of Research Report.*

Rare Chance to Hear String Trio Play

An uncommon musical treat is in store for lovers of classical music when the Garneau Chamber Ensemble makes its debut in Convocation Hall, Sunday, 7 December, at 8 p.m.

The Ensemble is a newly-created string trio (Norman Nelson, violin; Michael Bowie, viola; and Mark Eeles, cello) that becomes a piano quartet when joined (occasionally) by Helmut Brauss on the piano.

According to Eeles, "Some marvellous music has been written for string trios, but it's rather difficult, so there aren't many string trios in the world. We hope to play a lot of lovely music that isn't heard very often."

On the program on Sunday will be two "Fantasias" by Henry Purcell, both of them trios for violin, viola and cello; a seldom-played composition by Beethoven, "String Trio, Opus 9"; and Brahms' "Piano Quartet in A Major."

"The music is very lovely, and very accessible," says Eeles. "Anyone who likes classical music will love it."

The players (all Music faculty) are hoping to re-establish a top-flight performing ensemble within the University—thus making one of (new Music chairman) Alfred Fisher's dreams come true.

A musical tour is planned for 1987. In January they'll perform in Brandon, Manitoba; Grande Prairie will hear them in February; and in March they'll be back in Convocation Hall.

Don't miss them this Sunday. □

Expert on Idiot Savants to Speak at Conference

To mark the beginning of its third decade, the Developmental Disabilities Centre (formerly the Centre for the Study of Mental Retardation) is sponsoring an on-campus conference, "Developmental Disabilities: Assessment, Intervention, Policy", 13 and 14 December. Members of the University community are welcome as guests at all sessions.

The Distinguished Visiting Speaker is Neil O'Connor from the Medical Research Council Unit, University of London, who is a pioneer in the study of mental retardation. Dr. O'Connor's research in that area, as well as in autism, deafness, and on the gifted and talented, and idiot savants, is recognized as having broken new paths.

In addition to speaking at the conference, 13 December, on

"Intelligence and Developmental Disabilities", Dr. O'Connor will give two further talks: "Experiments with Idiot Savants", 11 December, and "Idiot Savants: History and Special Talents", 15 December.

Other visiting speakers are H. Carl Haywood, Professor in Psychology and Neurology at Vanderbilt University, whose topic on 13 December is "Intervention with developmentally disabled preschool children"; and Arthur Jensen, Professor of Education and Psychology, University of California-Berkeley, who will discuss "Chronometric Analysis of Intellectual Deficit" on 14 December.

Further topics for discussion on 13 December are: "Diagnosis and assessment of developmentally disabled children", Robert Shea,

Glenrose Hospital; "Language intervention with young, developmentally disabled children", Gerard Kysela (Educational Psychology); and "Cognitive education and learning strategies", Robert Mulcahy (Educational Psychology).

"A new look at intellectual assessment", will be considered on 14 December by J.P. Das, Director of the Developmental Disabilities Centre, and Jack Naglieri from Ohio State University. The final presentation, "Resolving dependencies: policies that work", will be made by Perry Kinkaide, Director, Corporate Development, Alberta Social Services and Community Health.

Further information from J.P. Das or Fran Russell, 6-123d Education North. 432-4505/4439. □

The Dioxins: Fears and Facts

Industrial accidents, news media attention, lawsuits, health questions, and public dread are all involved with the dioxins. Ron Thomas, the Editor of Folio, conducted this interview with W.E. Harris with a view to providing to the public concise, non-technical information on the dioxins. Dr. Harris has been with the University of Alberta for 40 years and is a former Chairman of the Chemistry Department. He has been a consultant to Alberta Environment on the management of hazardous or special wastes.

R. Thomas: On this subject of dioxins what are some of the main items of general interest?

W.E. Harris: The dioxins are ancient chemicals, but only recently recognized. The subject is complex with many ramifications—technical, political, and legal. There are many dioxins and they differ enormously. The toxicity of one of the dioxins makes it a significant health hazard at the concentration levels at which it has occurred. There are daunting challenges to chemical analysts, judges, regulators, epidemiologists, and those who would disseminate undistorted information on the subject.

Question: What are people referring to when they say dioxin?

Most people who use the word seem unaware that strictly there is only one chemical by that name. Furthermore, they are never referring to that particular chemical, which is a small, simple, and little known molecule. "Dioxin" as it is commonly used is a shortened and misleading name.

Question: What are they referring to then?

The reference is to one or more of the chlorinated derivatives of dioxin. Their names are jaw breakers for most of us.

Question: How many dioxins are there?

There are many. The most important family, which includes the chlorinated derivatives of dibenzo-*p*-dioxin, has 75. These 75 dioxins differ enormously from each other, particularly in the important matter of toxicity. Therefore, to avoid distortion, misinformation, and inaccuracy, one should specify which dioxin of the 75 is referred to and how much is involved.

Question: What about the abbreviation TCDD, which is sometimes used? Is that better than simply saying dioxin?

While the abbreviation TCDD is somewhat more specific, that too is used in a slipshod manner by both technical and non-technical people. It can refer to any of 22 tetrachloro isomers of dibenzo-*p*-dioxin. Again, since each of the 22 is different, one must ask which one and how much.

Question: What are the dioxins used for?

As far as I know, the dioxins are useless. Nobody wants or needs them. They are simply pollutants without redeeming features. In this respect they differ from materials that can be both beneficial and hazardous, such as cyanide, ammonia, sulfur dioxide, and natural gas.

Question: Which of the 75 dioxins is the most hazardous?

With little doubt, the worst one is 2,3,7,8-tetrachlorodibenzo-*p*-dioxin. It is correctly referred to by the abbreviation 2,3,7,8-TCDD. Its chemical structure is shown in the diagram. A Sherlock Holmes type of sleuthing was required to identify it as the culprit in the health problems of certain industrial workers.

Question: Are animals and man equally sensitive to 2,3,7,8-TCDD?

By no means. There are large species differences. For some reason the guinea pig is extraordinarily sensitive, the male more so than the female. Chickens are also highly sensitive. The hamster is much less sensitive. The amount of 2,3,7,8-TCDD needed to kill a single hamster would kill not 10, not 100, but thousands of guinea pigs. On the other hand, the octachloro compound is enormously less toxic than 2,3,7,8-TCDD. When talking about toxicity, we must remember not only that the various dioxins are vastly different from each other but also that there are equally great differences in the toxicity response of various species.

Question: Can predictions about human health effects for 2,3,7,8-TCDD be made on the basis of animal studies?

Contrary to the experience with many other substances, predictions are poor at best. Guinea pigs, rats, mice, rabbits, monkeys, birds, horses, bullfrogs, and hamsters differ from each other in their sensitivities and their reactions. However, some definite patterns do emerge such as weight loss, gastrointestinal disorders, and skin and liver damage. For humans we must depend mainly on the experience of those who have been accidentally or voluntarily exposed rather than on studies of other species.

Question: In reference presumably to 2,3,7,8-TCDD I have heard that it is the most toxic substance known. Is that correct?

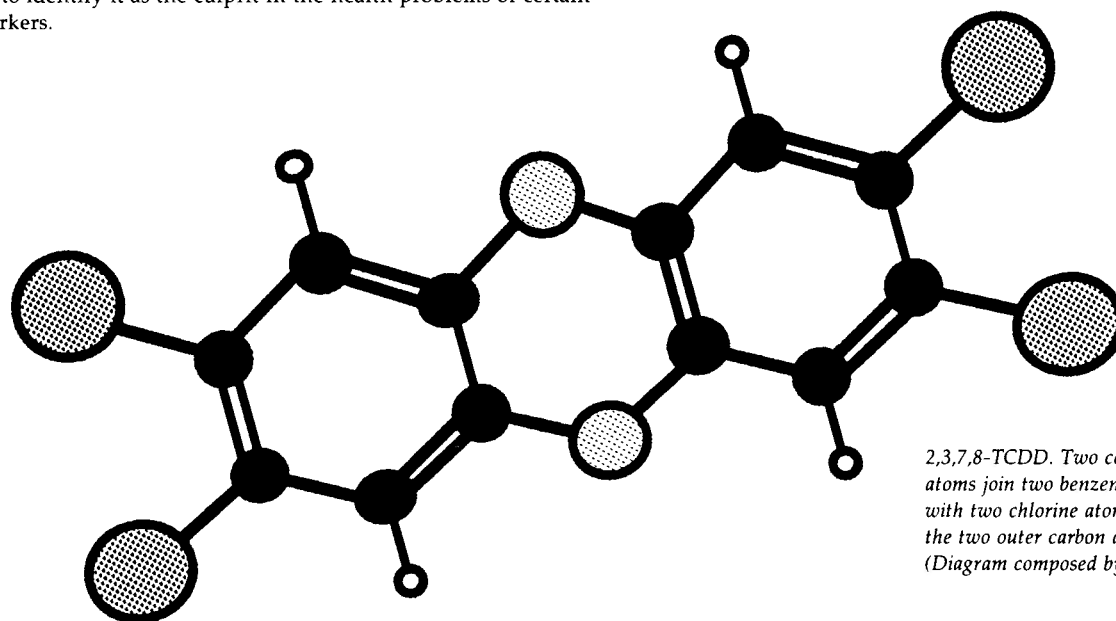
That can be called media toxicology; the statement is attention-grabbing. The toxicity to the male guinea pig is exceedingly high, not so high as tetanus toxin for example, but more so than cyanide. But for man the statement is an ostentatious exaggeration. Nevertheless, even though other substances are more toxic to man, let us not nitpick; it is unquestionably hazardous.

Question: If nobody wants the dioxins, why and how are they made?

They are not made intentionally. In low-temperature fires, that is, burning accompanied by dark smoke (a campfire is an example), dioxins may be formed in tiny amounts when a source of chlorine is available. Some are formed in forest fires, and more are formed in burning garbage dump that contain discarded fireproof synthetics. More significant have been the dioxins that can be unwanted byproduct impurities in the manufacture of useful materials such as some herbicides.

Question: Why do we hear so much about the dioxins recently and did not at all a decade or two ago?

The dioxins exist in only trace amounts. The recognition and study of the dioxins was hardly possible until recently, when methods were developed for the detection and measurement of the tiny amounts in which they are found in complex mixtures. Only since about 1980 have analytical methods been developed that can cope with measuring a part per trillion of 2,3,7,8-TCDD in complex mixtures where any or all of the 75 chlorinated dioxins may be present, along with far larger amounts of hundreds of other substances. We should probably still not be aware of them except for the adverse experience of some industrial workers. I first heard the word dioxin at a public meeting in 1979. I did not know what was being



2,3,7,8-TCDD. Two central oxygen atoms join two benzene rings, each with two chlorine atoms attached to the two outer carbon atoms.
(Diagram composed by A. Wiseman.)

red to, and afterward I had to search many chemistry books before I found anything on the subject. Today information is available on all the most important aspects of dioxins. Broader public understanding of the complexities is desirable.

Question: What were the adverse experiences of some industrial workers? Chloracne was noted in some workers in chemical industries in Germany as long ago as 1895. It was thought to be due to chlorine. Mild chloracne shows up as acne under the eyes and behind the ears. When exposure ceases, the chloracne clears but only slowly. In severe cases the acne is more widespread, and long-term scarring may ensue, a condition far worse than common acne.

Beginning in the mid-1950s, a thorough study of the causes of chloracne in workers making and handling the herbicide 2,4,5-T finally led to the recognition that the impurity 2,3,7,8-TCDD was the cause. But for the fact that this dioxin was the unwanted byproduct impurity causing the chloracne, we might still be unaware of the dioxins. For humans, chloracne is the surest indicator of significant exposure.

Question: What has been the most significant man-made source of dioxins?

The main source was the herbicide 2,4,5-T, which was made from a trichlorophenol. During the manufacture of the trichlorophenol some 2,3,7,8-TCDD was formed as an unwanted side product.

Question: How much 2,3,7,8-TCDD was made along with this herbicide? Not much, but for that particular dioxin even a small amount is more than enough.

Question: Have there been high-level exposures to man?

There have been several accidental exposures far beyond usual levels of 2,3,7,8-TCDD, particularly among some industrial workers. These exposures indicate that humans are among the less sensitive animals, probably like hamsters in this respect. The most heavily exposed have been workers in industries that made or used 2,4,5-trichlorophenol.

Especially when chemical reactions have been out of control, many hundreds of workers have been accidentally subjected to high exposures.

Question: Can 2,3,7,8-TCDD be removed from the herbicide 2,4,5-T?

The amounts can be greatly reduced, though not totally eliminated, by changing the conditions of manufacture. Most of what remains can be removed by an extraction procedure. The early 2,4,5-T herbicides such as those code-named Agents Purple, Pink, or Green contained relatively large amounts of 2,3,7,8-TCDD. Agent Orange, the purified version, had but little, and therefore the level of threat from this dioxin was low. However, the purification gave rise to another problem. The solvent used for extraction and removal of the 2,3,7,8-TCDD from the herbicide was recovered by distillation. The still bottoms (residue after distillation) retained the 2,3,7,8-TCDD, now at much more concentrated and dangerous levels. Some of these still bottoms have been grossly mishandled when they should have been properly destroyed. Times Beach in Missouri is one example.

Question: What happened at Times Beach?

To make a long story short, a company that had been making Agent Orange ceased operations. The facilities were leased to another company. Included with the property were the still and sludge bottoms from the earlier operations. Earlier wastes had been properly managed, but now a firm was given a contract to haul away the bottoms. In turn, the job was subcontracted to a waste-oil hauler. He mixed the bottoms with his waste oils and sprayed horse arenas with the mixture, causing illness in hundreds of horses and the death of many. He sprayed roads in as many as 150 sites, including the Times Beach area. In 1983, the U.S. Federal government and the State of Missouri bought the Times Beach Homes and moved the residents.

Times Beach is certainly an example of irresponsible management of a high-level hazardous waste.

Question: What happens to dioxins that have been spread on soil?

They last for a long time and do not move appreciably. That on the surface is presumably destroyed by sunshine. A recent study (T.H. Umbreit, E.J. Hesse, and M.A. Gallo, *Science*, 232, 497 (1986)) in which heavily contaminated soil from a manufacturing site was fed to guinea pigs showed that, because of adherence to this soil, there was low biological availability of the 2,3,7,8-TCDD to the animal. Soils differ, however, in the extent to which they stabilize the dioxins.

Question: What has been the worst incident involving 2,3,7,8-TCDD?

In Seveso, Italy, on a Saturday near noon in 1979 the safety valve on a pressure vessel burst. Along with a large amount of herbicide, possibly up to 2 kg of 2,3,7,8-TCDD was released on an area occupied by up to 40,000 people. The plume with the herbicide and the 2,3,7,8-TCDD settled over several hundred acres. The effect was one of devastation. The herbicide killed the vegetation. The 2,3,7,8-TCDD killed rabbits, mice, chickens, cats, rats, farm animals, and wild birds. Among the people, including many children, more than 100 cases of chloracne developed, 15 of them severe. The extent of disruption can be described in no less a word than tragedy. Because mankind is among the less sensitive species to this toxic material, in the end no human deaths occurred from the exposure. There were 730 pregnant women who were potentially exposed. This was at a time when little was known about the effects on the unborn, and the worst was feared. Among those who carried out their pregnancies the incidence of birth defects was not outside the usual range for the general population. Five years later, the chloracne had disappeared, and according to the ministry of health, no other effect on health had been observed. The disruption was a major tragedy, but at least for the short and medium term the health effects were limited. In matters of toxicology, for every question answered another can be asked. We can ask questions concerning the possibility of long-term (decades) effects. People are highly diverse in their genetic background and have differing sensitivities; what about the most sensitive?

Question: What has been the effect on other highly exposed groups?

Retrospective studies of production workers who were highly exposed two and three decades ago show no unusual levels of mortality, cancer, or heart disease. Despite its high toxicity, it appears not to have killed any of the most exposed humans, even though in some animals at toxic doses it causes cancer as well as birth defects.

Question: Can the dioxins be destroyed?

Dioxins are destroyed by sunlight or ultraviolet lamps. Since they are organic substances, they can also be destroyed by high-temperature incineration. The higher the temperature, the more complete is the destruction. The dioxin most resistant to destruction is the octachloro compound, which is fortunately the least toxic.

Question: Dioxins are formed in the burning of wood and of garbage dumps and yet are destroyed by high-temperature incineration. Could you amplify?

In low-temperature fires the reactions do not go all the way to completion (that is, to carbon dioxide and water). Some intermediate combustion products combine to form a wide range of substances, which includes dioxins. The higher the temperature, the more complete are the reactions and the fewer the recombinations. In municipal incinerators, which operate at moderately high temperatures, trace amounts of some dioxins can be found with the fly ash (suspended particulates).

I have seen no studies on the subject, but I have wondered about the levels of dioxins from smoking tobacco. The temperature conditions would seem to be ideal for their formation.

Question: Are we ordinary individuals exposed to dioxins?

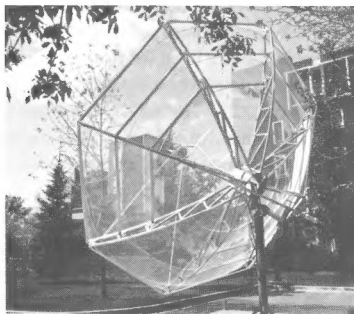
At some level, yes. Fires have undoubtedly been producing trace amounts for eons, with forest fires being the main source. During our lifetimes they have been produced at a somewhat higher level from burning garbage dumps containing fireproof synthetics and other such materials. Fortunately the amounts are at a low level, and fortunately 2,3,7,8-TCDD is probably not formed in an unusual proportion compared with the other 74. The best information I am aware of indicates that we have about 5 to 10 parts per trillion of 2,3,7,8-TCDD in the fat in our bodies (where it mainly resides), with a daily intake of about 0.1 to 0.2 nanograms.

Question: Will the problem of 2,3,7,8-TCDD get worse?

I think not. To the best of my knowledge the manufacture and use of trichlorophenol and 2,4,5-T has been discontinued. To the extent that residues remain from earlier operations, the "old" 2,3,7,8-TCDD should be destroyed by high-temperature incineration or through ultraviolet light. Thus the problem should be of decreasing magnitude, with "new" 2,3,7,8-TCDD coming mainly from fires of one sort or another.

The remaining material will appear next week. The question of toxicity to humans will be commented on in more detail. Other matters included will be research, regulatory, legal, and political implications. Several reference sources are cited.

Satellite Teleconferencing: Going the Distance the Easy Way



The receiving dish is the teleconferencing world's be-all and end-all.

A striking example of technology shrinking the world while at the same time enlarging the University's world is satellite teleconferencing.

Many organizations are now using this method of participating in a distant conference as either presenter or audience. They are discovering that such teleconferencing is a less expensive alternative to airlines, hotels, and

lost productive time. An over-committed but important speaker who may be unable to take the time to travel and attend an event in Edmonton might be quite willing to spend a couple of hours in a studio close to home, where an uplink to satellite can be made. The other end of the dialogue is made complete through normal long distance telephone service.

Using a 4.27 metre receiving dish on loan from Language Laboratories, the Department of Radio and Television has provided this service for CAD/CAM, engineering, robotics and disarmament conferences. Advance planning is very important in utilizing this service, as it can influence the location used for reception. The individuals who can provide additional information on expense estimate and site location are Wes Denison and Ken Pappes, Department of Radio and Television, 432-4962. □

'The Great Skate Give-Away'

You've heard of taking "An Alberta Break". Now you can give "An Alberta Gift"—of skates, that is. Again this year Campus Recreation is loaning skates to international students who want to experience the sport.

On 8 December from 11 a.m. to noon at the hockey arena, Campus Rec will be "giving-away" skates. More are needed. If you have a pair of skates which you haven't used in ages, secure one to the other and drop them off at the collecting box at the equipment room in the Van

Vliet Centre. Adult sizes are preferred, but large children's sizes will also be accepted.

The skates will be given to international students on an extended loan basis, with the hope that they will be returned to Campus Rec before the students leave campus. Skates are then loaned out again to other students.

Have a look around your basement, garage or storage closet, and remember, the skates which are taking up room could be put to good use. □

The Caravan Comes to Campus: Great Goods on Board

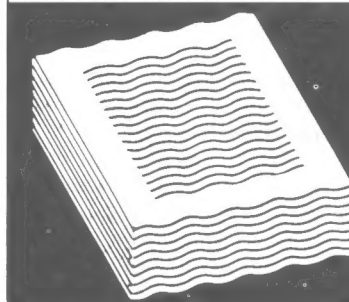
Caravan, an international handicraft sale and exhibition boasting handcrafted original works made by co-ops from around the world, comes to campus this week. Beadwork, carvings, batik, knitted garments in alpaca wool, toys and even carpets will be featured during Caravan's six-day stop here, from 4 to 9 December.

Caravan is sponsored by the World University Service of Canada, a non-profit organization

of faculty, students, administrators and alumni concerned with international development. Sales and exhibitions like this are designed to create a global marketplace for craftspeople from countries such as Afghanistan, Kenya, Sri Lanka, Ecuador, Lesotho, Cameroon, Bolivia, Haiti and India.

Caravan will be on display and open for business from 10 a.m. to 4 p.m., in the Gallery Lounge of HUB Mall. □

Currents



Call for Papers

The Severe and Multiple Handicaps Alternative Futures Conference will take place from 6 to 8 May 1987 in the Fantasyland Hotel, West Edmonton Mall. Submissions will be accepted until 31 December 1986.

Featured speakers include Marsha Forest, Bruce Kappel, Gerry Kysela, Jacques Langevin, and Nicola Schaefer.

Dick Sobsey (Educational Psychology, 432-3755) is helping to organize the conference.

Children's Movement Program

There are several vacancies for children 6 to 10 years of age in the noon to 1 p.m. games classes on Saturdays, beginning 17 January.

The program introduces the children to a variety of modified ball games. The major emphasis is on developing skills in game situations and on helping the children to understand the importance of rules and tactics.

For further information and registration, telephone Jeanne Dunn, 432-2746.

Drama Classes for Children

The University/Community Children's Drama Project will again hold a series of drama classes at Windsor Park Community Hall. Sessions will take place from 4:30 to 5:30 p.m. on Wednesdays (for 9 to 11 year olds) and Thursdays (for 6 to 8 year olds) from 7/8 January to 25/26 March.

Call Daryl Kozub at 432-0430 for further information on the project.

Capital Equipment Purchases

A program has been developed to provide the carry-over of unspent capital equipment funds into the next budget year. This carry-over will be limited to the lesser of 15 percent of the departmental capital equipment budget or \$50,000. Where the balance of unexpended funds is sufficient, commitments incurred by purchase orders placed before 31 December will be allocated a carry-over equivalent to the amount of the commitment.

Where the balance of your unexpended and/or uncommitted capital equipment budget is currently in excess of the foregoing limits, you are urged to place purchase orders for your further needs now to help ensure that delivery is effected before 31 March 1987. The program will not provide a carry-over in relation to commitments by purchase orders placed later than 31 December other than in instances where a well-documented justification of circumstances merits exception. Application for exemption should be submitted to the attention of D. Grover, Office of the Comptroller. Final approval on capital equipment carry-overs remains with the Associate

Vice-President (Administration), J.B. McQuitty.

Unexpended funds in excess of the limiting factors will lapse into a Capital Equipment Contingency Account.

Award Opportunities

Commonwealth Scholarships

Donor: New Zealand Government. *Where tenable:* New Zealand. *Level:* Post-graduate. *Field:* Unrestricted. *Value:* Includes travel expenses and is designed to cover the living and study costs of a scholar during tenure of the award. *Number:* Variable. *Duration:* One to three academic years (the academic year commences in March). *Conditions:* Available to students who are Canadian citizens to pursue post-graduate study; candidates must have graduated from a recognized university or hold equivalent qualifications; candidates must return to Canada upon completion of the study for which the award was intended; candidates must have a good knowledge of written and spoken English. Preference will be given to those who have obtained a university degree within the last five years. *Closing date:* 31 December 1986. *Further information and application forms should be requested from:* Scholarship Administration Services, Association of Universities and Colleges of Canada, 151 Slater Street, Ottawa, Ontario K1P 5N1.

Alberta Visiting Fellowships in Canadian Studies at the University of Edinburgh, Call for Applications

The Centre of Canadian Studies at the University of Edinburgh invites applications for one or more Alberta Visiting Fellowships to be held between October and May in the academic year 1987-88.

A visiting Fellow must be a faculty member of an Alberta university. Fellows should be engaged in research on a project associated with Canadian Studies and will be expected to take part in the teaching and seminar program of the Centre.

Fellows will be paid £250 per month and will be given office accommodation in the Centre if possible. They will be encouraged to undertake some travel to other universities. It is envisaged that Fellows will normally be on sabbatical leave from their home university.

The minimum tenure of a Fellowship will be three months.

The Centre will attempt to assist Fellows to secure living accommodation, although no guarantee can be given. Edinburgh has a large supply of furnished flats, and the monthly stipend is intended to cover rental costs.

The Fellowship has been made possible by a grant from the Government of Alberta. It is intended that Fellows should contribute a western Canadian viewpoint to the development of Canadian Studies in Edinburgh.

Applications should be sent to: Dr. Ged Martin, Director, Centre of Canadian Studies, 21 George Square, Edinburgh EH8 9LD, Scotland.

Applicants should include a *curriculum vitae*, including an indication of possible teaching contributions, a statement of intended research and the names and addresses of three referees.

Applications for 1987-88 should be received before 12 January 1987 and preferably as soon as possible. The Centre reserves the right to appoint by invitation.

Slipped Digit Causes Headache

The snippet pertaining to the brief article covering four courts at the University Tennis Centre (*Folio*, 27 November, page 6) contained the wrong telephone number. If you are interested in obtaining a membership at the Centre, call 438-2901 not 432-2901. (The latter number belongs to Music Studio B.)□

Surplus Equipment

The equipment appearing in this column is available only to University departments with University-administered funds. For more information, telephone Jody Brookwell or Roy Bennett, 432-3208.

Wanted: (1) Terrazzo Balance Table
I. Lenihan, Biochemistry, 432-5684.
Wanted: (1) Kiln
George Braybrook, Entomology,
432-5746.

Talks

Population Research Laboratory

8 December, 3 p.m. P. Krishnan, "Internal Migration in Canada: What We Know and What We Should Know." TB-W2 Tory Building.

Alberta Heritage Foundation for Medical Research

8 December, 4 p.m. Michael Gallatin, Department of Molecular Immunology, Division of Basic Sciences, Fred Hutchinson Cancer Research Center, Seattle, "Heterotypic Cell-Cell Adhesion During Hemopoiesis and Development of the Immune System." 4-70 Medical Sciences Building.

Plant Science

9 December, 4 p.m. R. Hornford, "Thresholds—Tools in Coffee Production." 811 General Services Building.

Ghanaian Students' Association

10 December, 6 p.m. Hon. David Russell, Deputy Premier and Minister of Advanced Education, "Studying in Alberta/Canada as a Foreign Student." 1-09 Business Building. Co-sponsored by the International Student Centre.

Canadian Institute of Ukrainian Studies

12 December, 7:30 p.m. David Marples, "Chernobyl and Nuclear Power in the USSR." Heritage Lounge, Athabasca Hall.

Anatomy and Cell Biology

16 December, 4 p.m. Paul St. John, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland, "Analysis and Isolation of Mammalian Neurons by

Fluorescence-Activated Cell Sorting." 6-28 Medical Sciences Building.

The Arts

Ring House Gallery

Until 11 January. "Ashoona Pitseolak—An Unusual Life"—a retrospective exhibition of prints by this Cape Dorset artist.
Until 11 January. "Keeveeok Aware!"—an exhibition of colored pencil drawings by Baker Lake artist Victoria Mamnguqsualuk.

Music

All events take place in Convocation Hall.

7 December, 8 p.m. The Garneau Trio—Norman Nelson, violin; Michael Bowie, viola; Mark Eeles, cello. With Helmut Brauss, piano.
15 December, 8 p.m. Chamber Music Concert.
16 December, 8 p.m. Chamber Music Concert.

Positions

The University of Alberta is committed to the principle of equal opportunity in employment and encourages applications from all qualified people.

In accordance with Canadian Immigration requirements, these advertisements are directed to Canadian citizens and permanent residents.

Support Staff

To obtain further information on the following positions, please contact Personnel Services and Staff Relations, 2-40 Assiniboia Hall, telephone 432-5201. These vacancies cannot be guaranteed beyond the date of publication.

Clerk Steno III (Term for one year), Educational Administration, \$1,366-\$1,716)
Administrative Clerk (Term for one year), Faculty of Extension, (\$1,522-\$1,945)
Administrative Clerk (Half-time), Pension and Benefits, (\$761-\$973)
Administrative Clerk, Personnel Services, (\$1,716-\$2,208)
Departmental/Executive Secretary, Physics, (\$1,716-\$2,208)
Departmental/Executive Secretary, (Trust - 20 hrs/wk), Faculty of Medicine (Animal Ethics Committee), (\$1,716-\$2,208)
Computer Assistant I, Computing Services, (\$1,226-\$1,522)
Computer Assistant II, Computing Services, (\$1,412-\$1,791)
Security Officer, Campus Security, (\$1,716-\$2,208)
Technician II (Trust/Part-time), Physical Therapy, (\$896-\$1,152)
Engineering Technologist II, Physical Plant—Plant Operations, (\$1,864-\$2,407)
Audio/Video Technician II, Radio and Television, (\$1,864-\$2,407)
Technologist I (Trust), Applied Sciences in Medicine, (\$1,945-\$2,510)
Technologist I (Trust), Physics, (\$1,945-\$2,510)
T.V. Producer II, Instructional Technology Centre, (\$2,208-\$2,861)
Occupational Health Nurse, Occupational Health and Safety, (\$2,304-\$2,992)
Programmer Analyst II, Energy Management, (\$2,304-\$2,992)
Programmer Analyst II, Printing Services, (\$2,304-\$2,992)

Programmer Analyst III, Computing Science, (\$2,741-\$3,579)

For vacant Library positions, please contact the Library Personnel Office, Basement, Cameron Library, 432-3339.

Advertisements

Accommodations available

Sale - Grandview Heights. Super home, close to ravine. Large, bright rooms. Immaculate condition. Large, west yard. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
Sale - Seventy-acre hobby farm. Adjoining city limits. Large, ranch-style bungalow with many extras. Nicely landscaped. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
Sale - Six, Miquelon lakefront lots. \$6,000 up. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
Sale - \$39,750 up. Choice city lots. Super subdivision. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
Sale - Tudor, two-storey, fully developed. Plus indoor pool. Three fireplaces. Attractive country setting. Chris Tenove, 433-5664, 436-5250. Spencer Realtor.
Sale - University exclusive. Two blocks to campus, 1 1/2-storeys with hardwood floors. Enjoyable south yard. By appointment. Harold Sager, 436-5250, 436-5102. Spencer Realtor.
Sale - By owner. Two-storey brick, three-bedroom house. South Garneau. Exceptional condition, sunny heated porch, hardwood floors, fireplace. Good-sized garden. 1,500', excluding porch. 439-0521 after 6 p.m.
For rent - Three-bedroom bungalow, 1 1/2 baths, rumpus room, garage, in the west end (Parkview), close to University bus. Available 1 January 1987. \$550. Lease and damage deposit. Phone 483-5691 after 5 p.m.
For sale - Windsor Park. Gorgeous, newly renovated home. Jacuzzi, main floor laundry, large windows. Bright and sunny. Ian Beattie, Re/Max Real Estate, 438-1575.
For sale - Grandview. Six bedrooms, nanny suite, large living room and dining room. Beautiful, treed lot. Ian Beattie, Re/Max Real Estate, 438-1575.
Sale - Owner. Ravine, three-bedroom bungalow, garage. Parkview location. \$90,000 10 1/4% assumable mortgage. \$104,900. 484-6791.
Rent - Three-bedroom older home, ten minutes from University by car. \$525/month to responsible tenants. Phone Holly, 439-6751.
Sale - Riverbend. Two-storey, immaculate, four-bedroom home. Neutral tones, three-piece ensuite with master. Fireplace in family room. Main laundry, double attached garage. \$128,000. Liz Crockford, Spencer Realtor, 436-5250.
For sale - Beautiful river view property. Five bedrooms, jacuzzi, fireplaces, superior construction and private location. Ten minutes to University. Liz Crockford, Spencer Realtor, 436-5250, 434-0555.
For sale - Executive townhouses expertly finished. Over 2,000 sq. ft. Jacuzzi, fireplaces, double garage. Ravine lot on one. From \$129,900. Liz Crockford, Spencer Realtor, 436-5250, 434-0555 res.
Rent - Going overseas. Main floor house. Furnished. Two bedrooms, study. Garage. Seven-minute drive to campus. Two direct buslines. Christmas or 1 January-30 April. 468-3302 evenings.

Goods for sale

Santa Claus ideas: used typewriters from \$50, new typewriters from \$189, computer interfaceable typewriters from \$425. Mark 9, HUB Mall, 432-7936.
Video disc player, Toshiba, \$100.
Microscope, zoom stereo 7X to 40X, \$200. XC skis, 170 cms, \$50. Size 12 muskrat jacket, seldom worn, \$150.
Cassette recorder, \$30. 435-8219, 432-4532.
Cash paid for appliances, 432-0272.
Microwave oven (Litton Moffat), like new; defrosts, browns roasts, etc. \$299. 436-5250, 434-0555 res.

Services

Donnic Word Processing. Specializing in theses, manuscripts, etc. 8315A 105 St. 432-1419.
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McMahon Word Processing. Professional typing service, proofread. Reports, theses, books. Lois McMahon, 464-2351.
Exotic China Tour: 20 days, fully escorted. Shanghai, Beijing, Xian, Guilin, Canton, Hong Kong. Depart Edmonton 2 June 1987. \$3,500. Don Pimm, 433-8322.
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Before January 15, 1987, interested parties are asked to submit investigators' curricula vitae together with an initial one-page summary proposal including the objective of the project and an estimate of the funding required. Full proposals will be invited from selected applicants. Biomira will enter confidentiality arrangements to protect the proprietary aspects of these proposals so please omit confidential information from initial submission. Funding will be negotiable. Contract awards will be made on an annualized basis with renewals subject to performance.

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